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(A)

MICROWAVE SIGNATURES AND PHYSICAL CHARACTERISTICS OF SNOW COVERED AND DESALINATED YOUNG SEA ICE

T. C. Grenfell, A. W. Lohanick and C. T. Swift

Young sea ice with a snow cover experiences rapid metamorphosis at the snow ice interface due to the high salinity at the ice surface and the insulating effects of the snow. As a result, a slush layer often appears even under cold conditions which gives rise to significant modifications in the microwave signatures. Time series of observations and accompanying analysis will be reported for selected cases.

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PASSIVE MICROWAVE OBSERVATIONS
of
Dessalinated & Snow Covered Young Saline Ice

U of Wash - T.C. Greenfell et al

U of Mass - C.T. Swift et al

NORDA@CAREL - A.W. Lohanick et.al.

Results from 1983/4 1984/5 1987/8
and 1988/9 seasons.

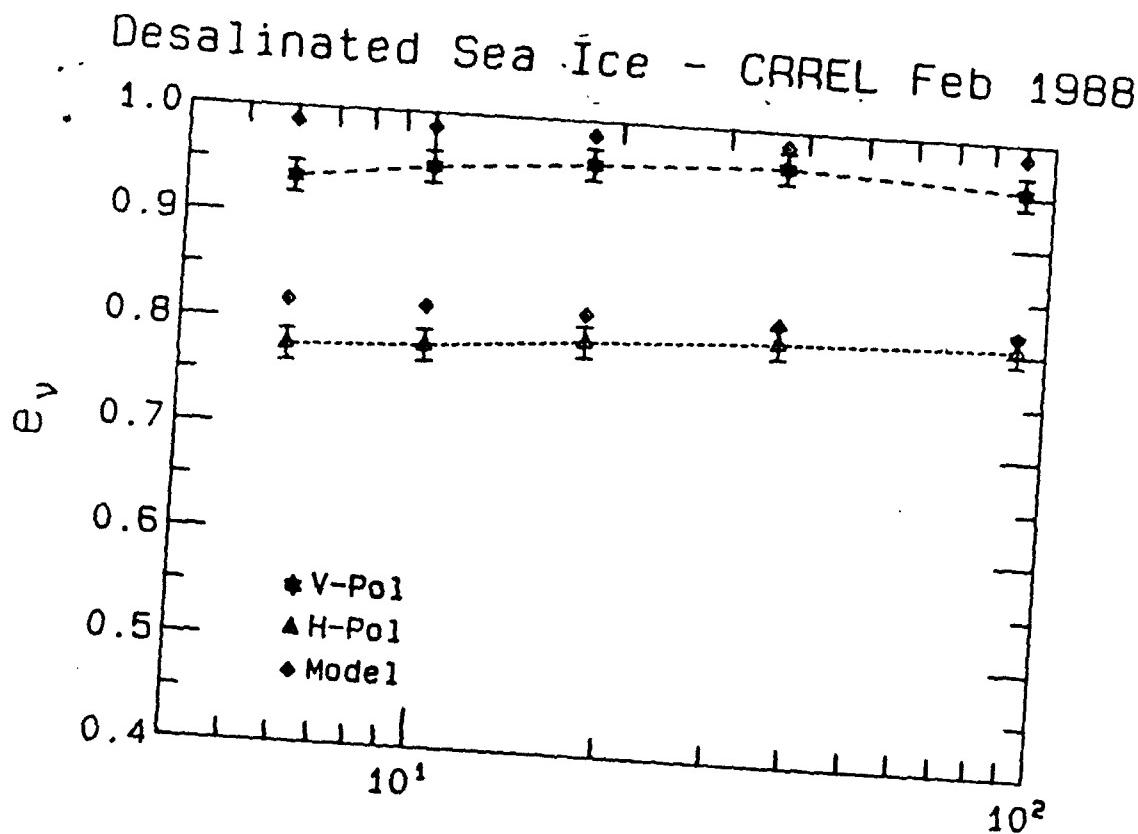
I. Simulated "Old Ice"

What we saw

How well we did.

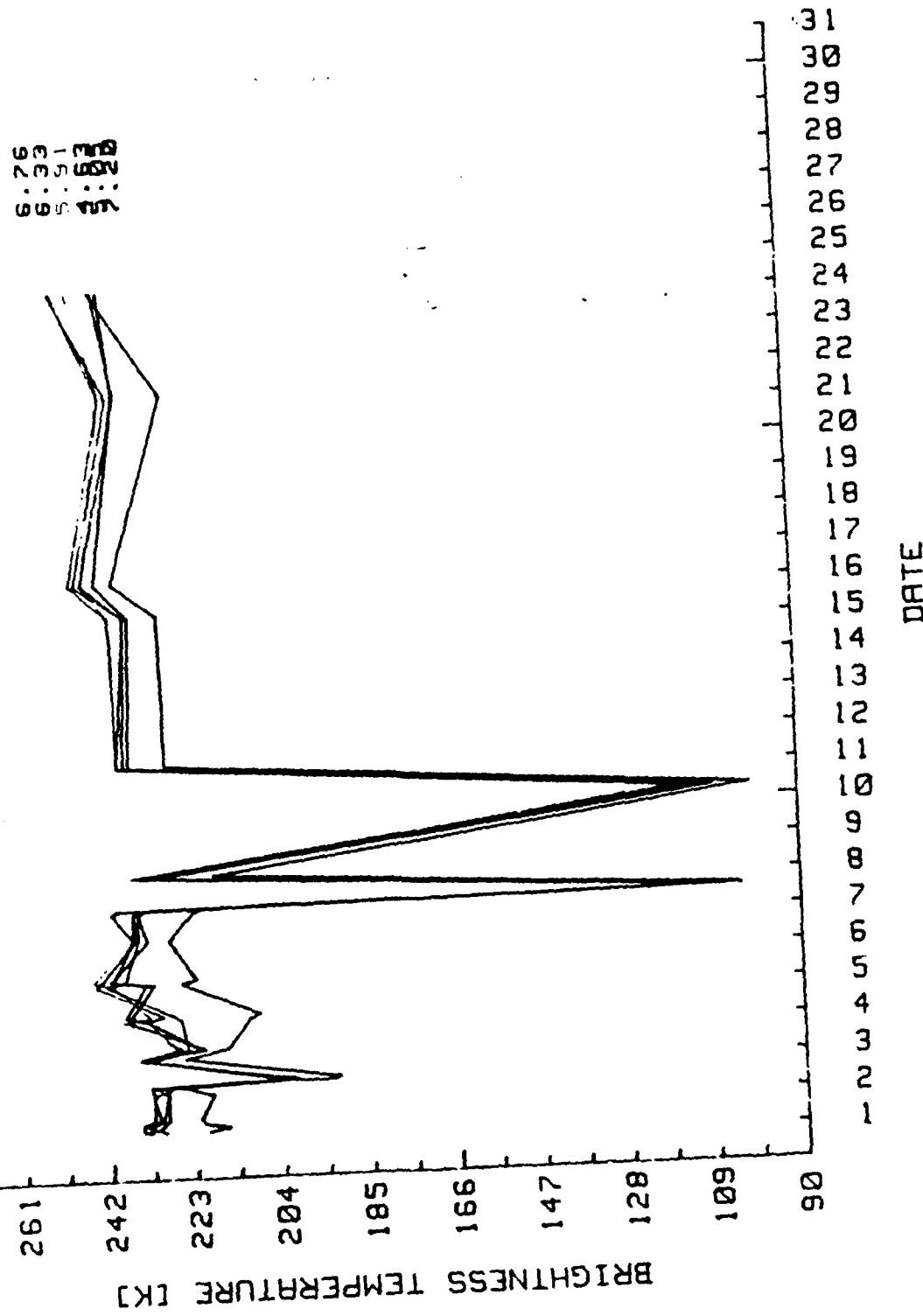
II. Snow Covered Ice

Contributing Effects

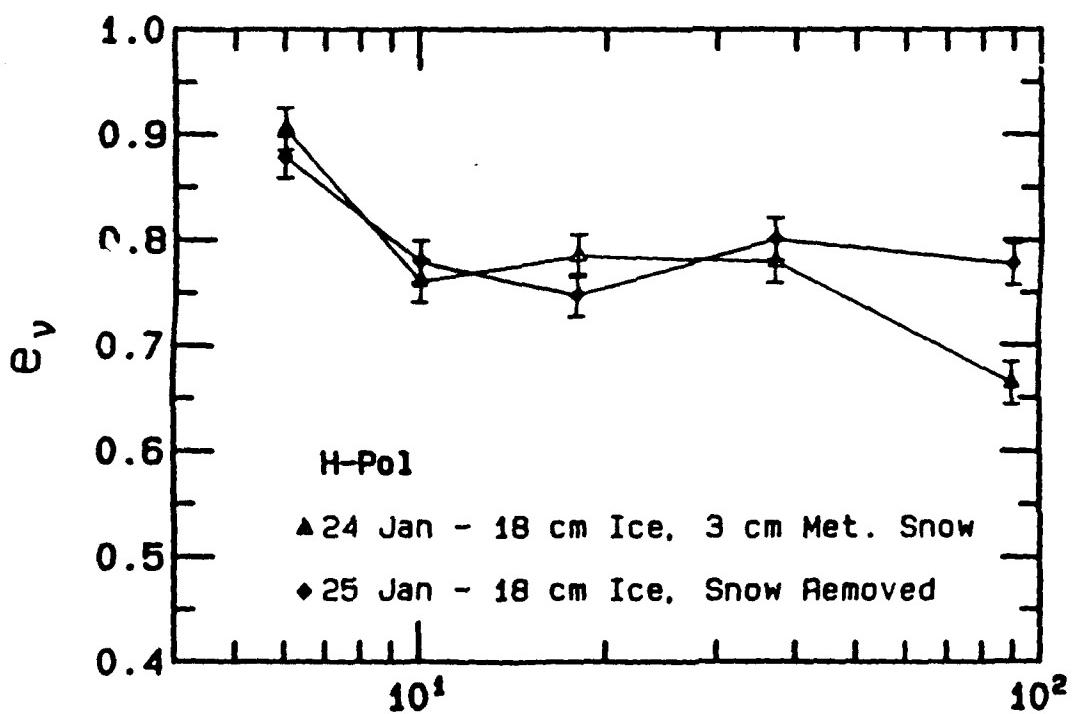
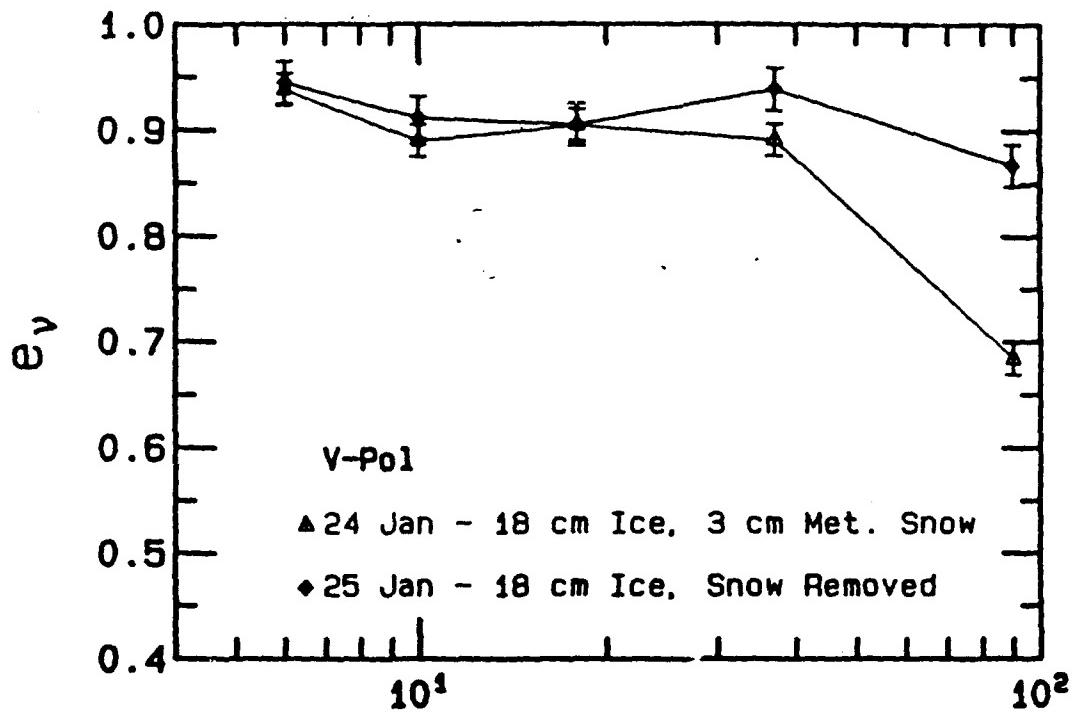


$\Im R=0$, $PR(18) = .096$, $PR(37) = .094$, $PR(90) = .085$ <nasiw5a>

CRRELEX '88 ICE SHEET 2; REMOTE OBSERVATIONS
MARCH



CRREL 1989 Drained Blocks

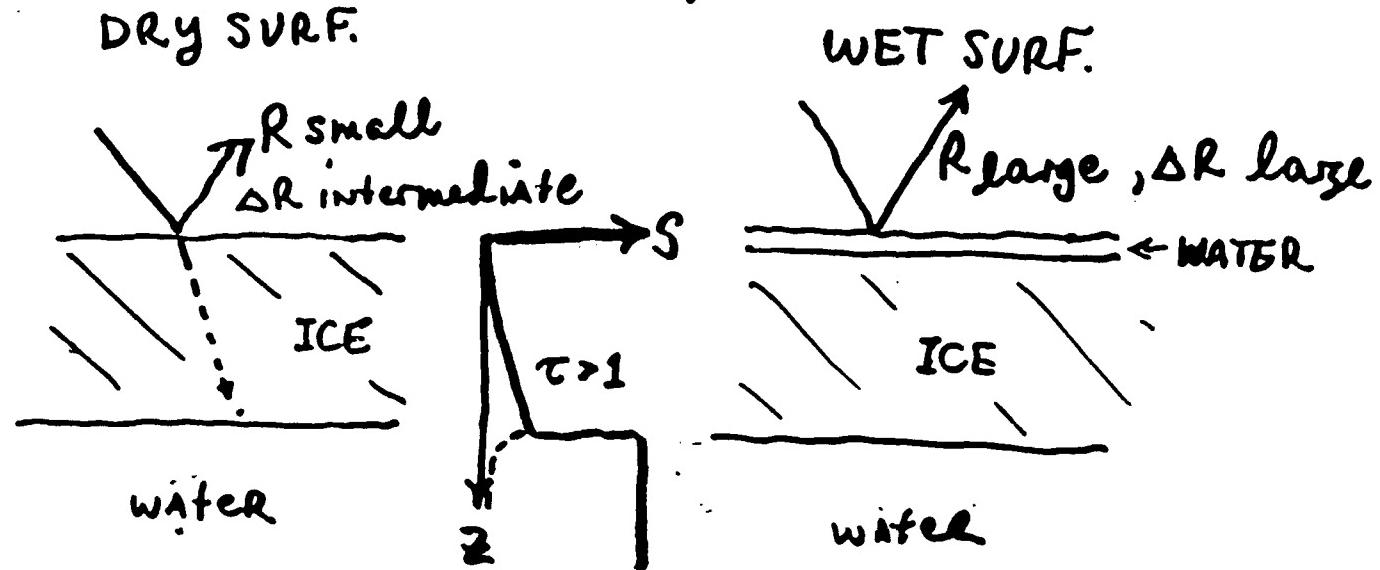


Freq (GHz)

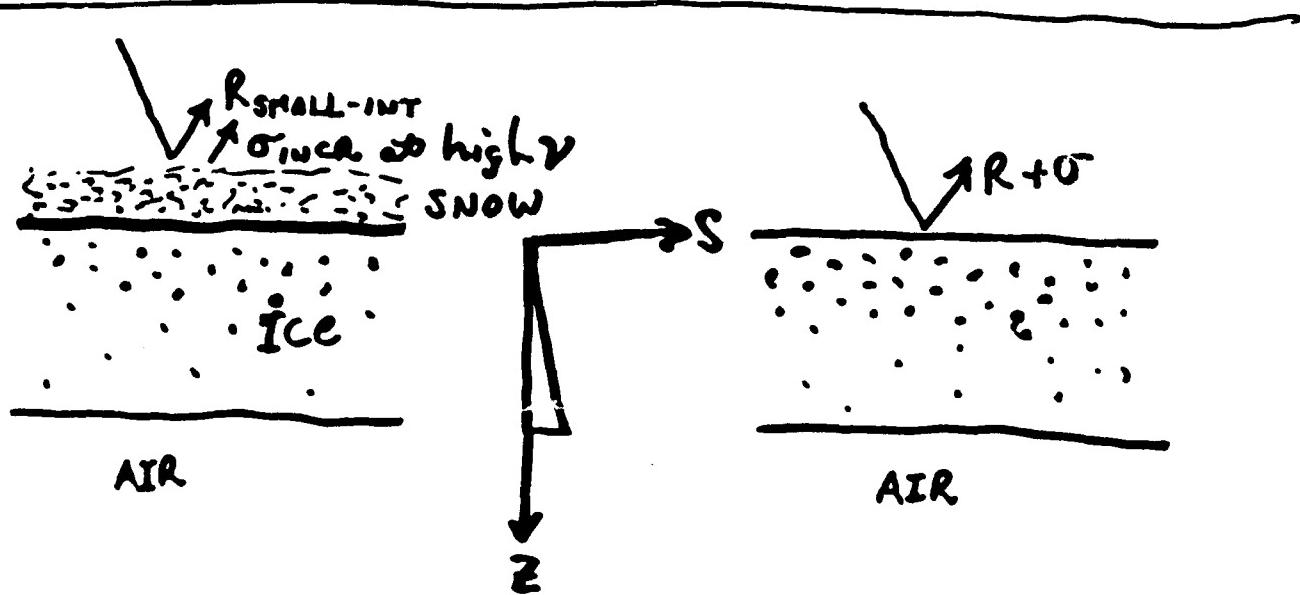
<nasiw6a&b>

$$\epsilon \approx 1 - R - f\sigma \quad \Delta R = R_{VPOD} - R_{HPOD}$$

1988 Desalin. Ice



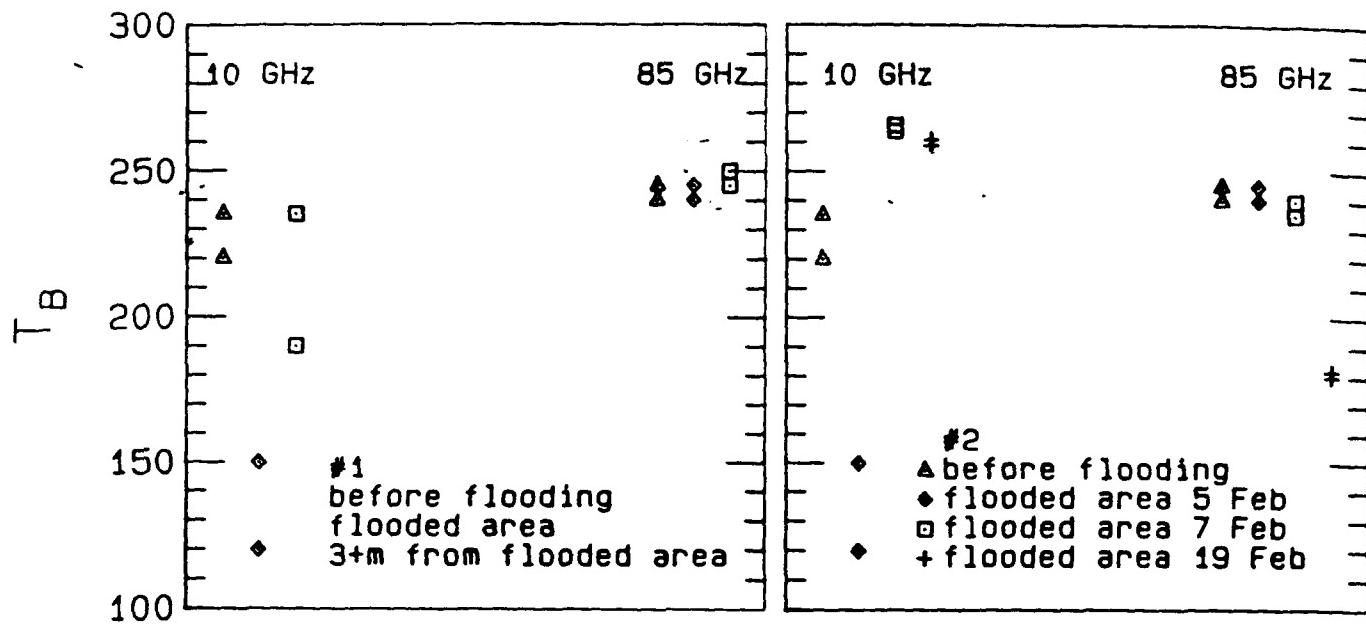
1989 Drained Blocks



CRREL 1987/88 Snow Observations

5 Feb 88

5 to 19 Feb 88



CONCLUSIONS

OI/MYI Simulation - not enough volume scattering yet.

Snow Effects to Account for / Exploit

1. Volume scattering at higher ν 's.
2. "Thin" film interference effects.
3. Flooding at the base of the snow layer;
4. Subsequent metamorphism / Refreezing.